

REMARKS

This case has been carefully reviewed and analyzed in view of the Office Action dated 27 February 2003. Responsive to the rejections set forth by the Examiner in that Office Action, Claims 1-3 as originally filed are now canceled from this case, and Claims 4-8 are inserted for further prosecution. It is believed that with the insertion of Claims 4-8, there is a further clarification of Applicant's invention for this Patent Application.

In the Office Action, the Examiner rejected Claims 1-3 under 35 U.S.C. § 102(b) as being anticipated by the Narita, et al. reference. The Examiner additionally rejected Claims 1-3 under 35 U.S.C. § 102(b) as being anticipated also by the Schicktanz, et al. reference.

As newly-inserted independent Claim 4 now more clearly recites, Applicant's hardness matched rotary mechanism is one which includes among its features displaceably coupled sliding bearing and shaft components. The sliding bearing is formed with "an inner surface portion defining an axially extending bore," while the shaft which "extend[s] coaxially into said bore of said sliding bearing," is formed with "an outer surface portion slidably engaging said inner surface portion of said sliding bearing." As the Claim also now more clearly recites, "one of said inner and outer surface portions...[is] formed of a metal alloy material having a substantial hardness value approximately within the range of HRC 50 - HRC 60," while "the other of said inner and outer surface portions...[is] formed of a ceramic material having a substantial hardness value of approximately HRC 90."

Such features are nowhere disclosed by the cited references. Note, for instance, that Narita, et al. discloses a ball bearing assembly. In citing this reference, the Examiner presumably correlated the shaft 2 and ball bearing 1 with Applicant's shaft and sliding bearing. Note, however, that ball bearing 1 includes concentric outer and inner (1a) rings between which a plurality of rolling balls are captured. The rotary displacement occurs between the inner and outer rings via the rolling balls. It does not occur between the shaft and the inner ring 1a to which it is secured. The reference clearly specifies unambiguously in this regard that the shaft is "fitted in said inner ring for rotation therewith," (Column 3; lines 49-50). This teaches quite diametrically away from Applicant's rotary mechanism, wherein the shaft is formed with "an outer surface portion slidably engaging...[an] inner surface portion of said sliding bearing," a newly-inserted independent Claim 4 clearly recites. Such absence of slidable engagement, moreover, wholly obviates in the Narita, et al. assembly the other features also recited by Applicant's pending Claims.

The Schicktanz, et al. reference does disclose an assembly wherein a shaft 1 is coaxially disposed within a bearing sleeve 2 in such manner that relative displacement may occur therebetween. Note, however, that the primary focus of this reference is to accommodate for the potentially disruptive thermal expansion of these two parts 1 and 2. For the express purpose, then, of preventing the situation in which "the shaft 1...come[s] into contact with the bearing sleeve 2" upon exposure to varying temperatures, the reference prescribes in no uncertain terms "maintaining sufficient radial clearance 4"

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between the parts (Column 3; lines 26-27; 34). The reference thus does not permit, much less teach, a "shaft having an outer surface portion slidably engaging...[an] inner surface portion of...[a] sliding bearing," which Applicant's Claim 4 recites. Nor does the reference anywhere even suggest the use in such components of "a metal alloy material having a substantial hardness value approximately within the range of HRC 50 - HRC 60,...and...a ceramic material having a substantial hardness value of approximately HRC 90," as Applicant's Claim 4 also now more clearly recites.

It is respectfully submitted, therefore, that the cited Narita, et al. and Schicktanz, et al. references fail to disclose the unique combination of elements recited by Applicant's pending Claims for the purposes and objectives disclosed in the subject Patent Application.

It is now believed that the subject Patent Application has been placed in condition for allowance, and such action is respectfully requested.

Respectfully submitted,  
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